

Prelim. Health Assessment
Doc - for McGraw-Edison

PRELIMINARY

Health Assessment for

McGRAW-EDISON CORPORATION

CERCLIS NO. MID005339676

CALHOUN COUNTY, MICHIGAN

Date - 4/89



Authz

Agency for Toxic Substances and Disease Registry
U.S. Public Health Service

THE ATSDR HEALTH ASSESSMENT: A NOTE OF EXPLANATION

Section 104(i)(7)(A) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended, states "...the term 'health assessment' shall include preliminary assessments of potential risks to human health posed by individual sites and facilities, based on such factors as the nature and extent of contamination, the existence of potential pathways of human exposure (including ground or surface water contamination, air emissions, and food chain contamination), the size and potential susceptibility of the community within the likely pathways of exposure, the comparison of expected human exposure levels to the short-term and long-term health effects associated with identified hazardous substances and any available recommended exposure or tolerance limits for such hazardous substances, and the comparison of existing morbidity and mortality data on diseases that may be associated with the observed levels of exposure. The Administrator of ATSDR shall use appropriate data, risk assessments, risk evaluations and studies available from the Administrator of EPA."

In accordance with the CERCLA section cited, ATSDR has conducted this preliminary health assessment on the data in site summary form. Additional health assessments may be conducted for this site as more information becomes available to ATSDR.

Introduction

An ATSDR Health Assessment is an evaluation of data and information on the release of hazardous substances into the environment. These assessments, one for each of the National Priorities List toxic waste sites, have been mandated by the Superfund law in order to accomplish several objectives. Among these objectives are: 1.) To assess any current or future impacts on public health, 2.) To develop health advisories or other health recommendations and 3.) To identify actions, including studies, that are needed to either mitigate and evaluate human health effects, or to prevent them from occurring.

A health assessment for a facility or a particular release of substances consists of the evaluation and interpretation of available information and analytical data. The process is iterative, that is, the assessment constantly builds upon existing material and is subject to change as more information and data become available. The assessment process does not wait for completion of all possible studies relevant to a site but instead builds a report based on the best available information from all relevant sources and distributes it in a timely manner.

New information provided by the public following their review of this document will be taken into consideration during preparation of any subsequent updated assessments for the site. Such information can be sent to:

Michigan Department of Public Health
Center for Environmental Health Sciences
3500 N. Logan, P.O. Box 30035
Lansing, Michigan 48909

PRELIMINARY HEALTH ASSESSMENT
MCGRAW-EDISON CORPORATION
CALHOUN COUNTY, MICHIGAN
MID005339676
APRIL 1989

Prepared by:
Center for Environmental Health Sciences (CEHS)
Michigan Department of Public Health (MDPH)

Prepared for:
Office of Health Assessment
Agency for Toxic Substances and Disease Registry (ATSDR)

Background

The McGraw-Edison Corporation is listed on the U.S. Environmental Protection Agency (U.S. EPA) National Priorities List (NPL).

The McGraw-Edison Corporation is located in the eastern portion of Calhoun County in the City of Albion. It occupies approximately 24 acres in an industrialized area of the City. The plant manufactured air conditioners, humidifiers, dehumidifiers, electric heaters and air cleaners from 1958 through 1980. From 1970 through 1980, trichloroethylene (TCE) contaminated still bottoms (an oil waste) were spread on the site's dirt roads and parking areas to control dust. This residue was shown to contain up to 27,000 parts per million (ppm) TCE. It is estimated that a total of 15,000 gallons of wastes were spread on-site. In 1980, 76 monitoring wells were installed and sampled and five soil borings were analyzed. Groundwater samples analyzed from monitoring wells revealed TCE contamination down to depths of 200 feet in a sandstone formation. Extensive soil contamination was also identified. Two on-site wells, 45 private wells and three municipal wells were subsequently found to be contaminated. Residences affected were initially supplied with bottled water and later were connected to the municipal water supply. A Consent Decree was signed by McGraw-Edison in June 1984 to undertake remedial measures to abate contamination at the site. The 1984 Consent Decree required McGraw-Edison to remove and properly dispose of soils with TCE concentrations above 10 parts per billion (ppb), supply replacement water to any resident with contaminated water or to the entire City of Albion if municipal wells became contaminated. Additionally, installation of a groundwater purge and treatment system was required to clean all groundwater to a level below 1.5 ppb TCE and other volatile organic compounds or their degradation products, detected in the groundwater or soils at the plant site.

The Remedial Investigation/Feasibility study (RI/FS) has been completed.

Environmental Contamination and Physical Hazards

Initial investigations of the contamination at the McGraw-Edison site began in 1980. Monitoring well sampling from October 1980 through March 1981 revealed TCE contamination at a maximum of 946,937 ppb in shallow wells and 8,590 ppb in deep wells. One on-site water supply well (200 feet deep in sandstone) revealed 21 ppb TCE. Soil boring samples showed a maximum TCE concentration of 362,347 ppb. Approximately 50 private wells were sampled and levels as high as 733 ppb were detected in water from these wells. Municipal wells sampled in August 1984 revealed a maximum concentration of 2 ppb TCE in two wells located west of the site. These two wells are sampled bimonthly and organic contamination has not been detected since January 1985. However, several private wells (also located south of McGraw-Edison) showed contamination in 1985 (maximum concentrations of 3 ppb TCE and 1 ppb methylene chloride). In February 1988, samples taken from monitoring wells revealed a maximum concentration of 4,800 ppb TCE in the shallow aquifer and 400 ppb TCE in the deep aquifer. Surface water sampling has not been performed.

The McGraw-Edison site does not present any physical hazards. The plant closed in 1980 and the site is completely restricted.

Potential Environmental and Human Exposure Pathways

The McGraw-Edison plant site is underlain by unconsolidated glacial sediments including a sandy unit with lenses of gravel, coal and silt, and a discontinuous clay unit. Depth to bedrock beneath the plant property ranges from 45 to 75 feet. A layer of sandstone is found below the glacial drift. There are two distinct aquifer systems present at the site. The thickness of the uppermost aquifer varies from approximately 1 to 50 feet. The direction of the groundwater flow in this aquifer is to the south-southwest. The lower aquifer is found from approximately 10 to 75 feet below the ground surface and is a minimum of 290 feet thick. The generalized direction of groundwater flow is to the southwest. Influences on the groundwater flow include the municipal well field located northwest of the site. The plume of contamination is moving in a southwesterly direction from the site. It has migrated less than 0.5 mile off-site.

Potential human exposure pathways include ingestion, inhalation, and dermal contact associated with contaminated groundwater, surface water, soils and stream sediments. The city's six municipal wells are located within three miles of the site. Affected residents now receive water from the municipal water supply. Some residences declined to be connected the municipal water supply. The Kalamazoo River (located approximately 0.5 miles from the site) is used for recreational activities such as swimming and fishing.

Demographics

Approximately 11,000 persons reside within a three mile radius of the McGraw-Edison site. This includes the entire population of the City of Albion. A school is located approximately one-half mile south of the site. Distance to the nearest residence is 0.2 mile.

Evaluation and Discussion

As a result of the Consent Decree, approximately 6,100 cubic yards of the contaminated soils were removed and disposed of in an approved hazardous waste facility, however, areas of soil containing greater than 10 ppb TCE still remain. Plans for a soil flushing system were submitted to the Michigan Department of Natural Resources (MDNR) for final approval. If soil flushing does not ve the soil contaminants to a concentration of 10 ppb TCE or less after a ten year period, McGraw-Edison will be required to excavate and remove the contaminated soils or implement another MDNR approved remedial action.

A groundwater purge and treatment system has been installed as required by the Consent Decree. A deep aquifer recovery well is operating on-site. This well is used to extract groundwater from the deep aquifer. Contaminated groundwater is treated on-site with an air-stripper. The groundwater treatment system for the shallow aquifer consists of a carbon adsorption tank. The groundwater treatment system is required to operate until the groundwater is cleaned up to less than 1.5 ppb TCE. Pursuant to an NPDES permit, a maximum of 5 ppb TCE is allowed to be discharged to the Kalamazoo River from the groundwater purge treatment system. Subsequent to meeting the shut down criteria specified in the Consent Decree, a forty-year monitoring program is required.

Conclusions and Recommendations

This site is of potential public health concern because of the risk to human health that could result from possible exposure to hazardous substances at levels that may result in adverse health effects over time. As noted in the Potential Environmental and Human Exposure Pathways section, human exposure to TCE has occurred and/or may be occurring via contaminated groundwater, surface water, soils and sediments. We concur with the need for extensive monitoring as described in the Evaluation and Discussion section.

It is recommended that the Kalamazoo River be sampled to determine if surface waters are contaminated and to evaluate the potential for human exposure to contaminated surface waters.

In accordance with the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) as amended, the McGraw-Edison site has been evaluated for appropriate follow-up with respect to health effects studies. Although there are indications that human exposure to on-site and off-site contaminants has previously occurred and may be presently occurring, this site is not being considered for follow-up health studies at this time. Previous exposure to the municipal water supply was at low concentrations for only a short period of time. The population served by highly contaminated private wells was small and there no known human exposure at this time.

Sources:

Site Inspection 9/79 and 9/82

Hydrogeological Study 1981

Preliminary Assessment 2/83

HRS 5/83

Interoffice Communication

Consent Decree 4/85

Hydrogeological Study 1986

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